

## TEMPORARY FAA APPROVED AIRPLANE FLIGHT MANUAL CHANGE

Publication Affected: Model 501 (501-0001 thru -0689) basic FAA Approved Airplane Flight Manual, Revision 28, dated 4 August 2003.

Airplane Serial Numbers Affected: Airplanes 501-0001 thru -0689.

Description of Change: Section III, Operating Procedures, Normal Procedures, FLIGHT INTO ICING, replace temperature values in second sentence of the first paragraph, and under ANTI-ICE AND DEICE SYSTEMS, replace temperature values in last paragraph.

Filing Instructions: Insert this temporary change in the Model 501 501-0001 thru -0689 basic FAA Approved Airplane Flight Manual adjacent to page 3-42 or 3-42.1.

Removal Instructions: This temporary change must be removed and discarded when Revision 29 has been collated into the basic FAA Approved Airplane Flight Manual.

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In Section III, Operating Procedures, Normal Procedures, FLIGHT INTO ICING, replace the first paragraph with the following:

Flight into known icing is the intentional flight into icing conditions that are known to exist by either visual observation or pilot weather report information. Icing conditions exist any time the indicated RAT is 50°F (+10°C) and below, and visible moisture in any form is present. Cessna Citations, which have properly installed operating anti-ice and deice equipment, are approved to operate in maximum intermittent and maximum continuous icing conditions as defined by 14 CFR Part 25, Appendix C. The equipment has not been designed to provide protection against freezing rain or severe conditions of mixed or clear ice. During all operations, the pilot is expected to exercise good judgment and be prepared to alter the flight plan, i.e. exit icing, if conditions exceed the capability of the aircraft and equipment.

In Section III, Operating Procedures, Normal Procedures, ANTI-ICE AND DEICE SYSTEMS, replace the last paragraph with the following:

All anti-ice systems should be turned on when operating in visible moisture and the indicated OAT is 50°F (+10°C) and below.

**APPROVED BY**   
Margaret Kline, Manager  
Aircraft Certification Office  
Federal Aviation Administration  
Wichita, Kansas  
**DATE OF APPROVAL** 2/26/07

## FLIGHT INTO ICING

Flight into known icing is the intentional flight into icing conditions that are known to exist by either visual observation or pilot weather report information. Icing conditions exist any time the indicated RAT is +10°C to -30°C, and visible moisture in any form is present. Cessna Citations, which have installed properly operating anti-ice and deice equipment, are approved to operate in maximum intermittent and maximum continuous icing conditions as defined by FAR 25, Appendix C. The equipment has not been designed to provide protection against freezing rain or severe conditions of mixed or clear ice. During all operations, the pilot is expected to exercise good judgement and be prepared to alter the flight plan, i.e. exit icing, if conditions exceed the capability of the aircraft and equipment.

Ice accumulations significantly alter the shape of airfoils and increases the weight of the aircraft. Flight with ice accumulated on the aircraft will increase stall speeds and alter the speeds for optimum performance. Flight at high angle-of-attack (low airspeed) can result in ice building on the underside of the wings and the horizontal tail aft of areas protected by boots or leading edge anti-ice systems. Prolonged flight with the flaps and/or landing gear extended is not recommended. Trace or light amounts of icing on the horizontal tail can significantly alter airfoil characteristics which will affect stability and control of the aircraft. Minimum airspeed for sustained flight in icing conditions (except approach and landing) is 160 KIAS.

Freezing rain and clear ice will be deposited in layers over the entire surface of the airplane and can "run back" over control surfaces before freezing. Rime ice is an opaque, granular and rough deposit of ice that usually forms on the leading edges of wings, tail surfaces, pylons, engine inlets, antennas, etc.

## ANTI-ICE AND DEICE SYSTEMS

This airplane is approved for flight into known icing conditions if optional deice boots are installed.

The anti-ice system consists of bleed air heated engine inlets, bullet nose, stators, windshields (left and right), electrically heated pitot tubes, static ports, angle-of-attack probe (if installed) and wing leading edge segments ahead of each engine. The wing outboard of the electric elements, the horizontal stabilizer and vertical stabilizer are deiced by pneumatic boots. Windshield alcohol anti-ice is also provided as a backup system for the left windshield.

All anti-ice systems should be turned on when operating in visible moisture and the indicated OAT is between +50°F and -22°F (+10°C and -30°C).

## FLIGHT INTO ICING

Flight into known icing is the intentional flight into icing conditions that are known to exist by either visual observation or pilot weather report information. Icing conditions exist any time the indicated RAT is +10°C to -30°C, and visible moisture in any form is present. Cessna Citations, which have installed properly operating anti-ice and deice equipment, are approved to operate in maximum intermittent and maximum continuous icing conditions as defined by FAR 25, Appendix C. The equipment has not been designed to provide protection against freezing rain or severe conditions of mixed or clear ice. During all operations, the pilot is expected to exercise good judgement and be prepared to alter the flight plan, i.e. exit icing, if conditions exceed the capability of the aircraft and equipment.

Ice accumulations significantly alter the shape of airfoils and increases the weight of the aircraft. Flight with ice accumulated on the aircraft will increase stall speeds and alter the speeds for optimum performance. Flight at high angle-of-attack (low airspeed) can result in ice building on the underside of the wings and the horizontal tail aft of areas protected by boots or leading edge anti-ice systems. Prolonged flight with the flaps and/or landing gear extended is not recommended. Trace or light amounts of icing on the horizontal tail can significantly alter airfoil characteristics which will affect stability and control of the aircraft. Minimum airspeed for sustained flight in icing conditions (except approach and landing) is 160 KIAS,

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The anti-ice system consists of bleed air heated engine inlets, bullet nose, stators, windshields (left and right), electrically heated pitot tubes, static ports, angle-of-attack probe (if installed) and wing leading edge segments ahead of each engine. The wing outboard of the electric elements, the horizontal stabilizer and vertical stabilizer are deiced by pneumatic boots. Windshield alcohol anti-ice is also provided as a backup system for the left windshield.

All anti-ice systems should be turned on when operating in visible moisture and the indicated OAT is between +10°C and -30°C.

**ANTI-ICE AND DEICE SYSTEMS** (Continued)**ENGINE ANTI-ICE SYSTEM**

Bleed air flows continuously through the bullet nose whether the anti-ice system is activated or not. When the engine anti-ice switches (one for each engine) are turned on, bleed air flows through the engine inlet and engine stators if the throttle position is above 45% fan speed. If sufficient bleed flow is not available to maintain the proper engine inlet temperature, or the stator bleed air valve does not open, the engine ice fail light on the annunciator panel will illuminate. The light may be extinguished by increasing engine RPM. Operation of the system may be checked by observing engine ITT and fan speed when the engine anti-ice is turned on. The ITT should increase and the fan speed should decrease. If the check is made on the ground, it will require approximately two minutes to extinguish the engine ice fail light with fan speed set at approximately 70%. Maximum engine power setting values are reduced when using anti-ice, as shown in Section IV. Loss of electrical power to the valve supplying flow to the inlets results in the valve opening, thus assuring anti-ice capability.

The electrically heated wing section ahead of each engine consists of multiple elements and is turned on with the same switch which turns on the bleed air to the engine inlet and is not dependent upon engine power. Normal operation of the heated sections will result in approximately 120 amps each, as show on the ammeters, until the wing temperature reaches the maximum allowable, at which time the sections cycle off; thus maintaining a given temperature range. The electrically heated wing section is controlled automatically by a controller. If the controller fails, the system will still cycle due to an overheat sensor installed in the system. If the system is cycling with a failed controller, the L or R ENG ICE FAIL light will illuminate each time the system cycles off. In the event any element fails in the heated section, or a minimum acceptable temperature is not maintained on the wing elements, the L or R ENG ICE FAIL light will illuminate. The affected heated wing section may then be observed for indication of the ice build-up.

**WINDSHIELD ANTI-ICE**

The windshield bleed air system provides windshield anti-ice under all normal operating conditions. This system also provides external windshield defog and rain removal. The system supplies engine bleed air through an electrically actuated pressure regulating shutoff valve in the tailcone of the airplane and manually positioned valves which regulate air to each windshield. The manual valves are located at each bleed air nozzle and are left in the OFF position for all normal operation. A check should be made to ensure that the rain removal knob is pushed in for windshield anti-icing. When windshield anti-icing is required, the W/S BLEED valves are turned on and the W/S BLEED switch is turned to LO if the indicated OAT is above 0°F or to HI if the indicated OAT is 0°F or below. Normal system operation is indicated by an increase in air noise as the bleed air discharges from the nozzles. A temperature sensor is located near the discharge nozzles and automatically controls the windshield bleed air temperature by modulating crossflow air through a heat exchanger in the tailcone.

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**ANTI-ICE AND DEICE SYSTEMS** (Continued)**ENGINE ANTI-ICE SYSTEM**

Bleed air flows continuously through the bullet nose whether the anti-ice system is activated or not. When the engine anti-ice switches (one for each engine) are turned on, bleed air flows through the engine inlet and engine stators if the throttle position is above 45% fan speed. If sufficient bleed flow is not available to maintain the proper engine inlet temperature, or the stator bleed air valve does not open, the engine ice fail light on the annunciator panel will illuminate. The light may be extinguished by increasing engine RPM. Operation of the system may be checked by first turning on the ignitors and then observing engine ITT and fan speed when the engine anti-ice is turned on. The ITT should increase and the fan speed should decrease. If the check is made on the ground, it will require approximately two minutes to extinguish the engine ice fail light with fan speed set at approximately 70%. Maximum engine power setting values are reduced when using anti-ice, as shown in Section IV. Loss of electrical power to the valve supplying flow to inlets results in the valve opening, thus assuring anti-ice capability.

The electrically heated wing section ahead of each engine consists of multiple elements and is turned on with the same switch which turns on the bleed air to the engine inlet and is not dependent upon engine power. Normal operation of the heated sections will result in approximately 120 amps each, as shown on the ammeters, until the wing temperature reaches the maximum allowable, at which time the sections cycle off; thus maintaining a given temperature range. The electrically heated wing section is controlled automatically by a controller. If the controller fails, the system will still cycle due to an overheat sensor installed in the system. If the system is cycling with a failed controller, the L or R ENG ICE FAIL light will illuminate each time the system cycles off. In the event any element fails in the heated section, or a minimum acceptable temperature is not maintained on the wing elements, the L or R ENG ICE FAIL light will illuminate. The affected heated wing section may then be observed for indication of the ice build-up.

**WINDSHIELD ANTI-ICE**

The windshield bleed air system provides windshield anti-ice under all normal operating conditions. This system also provides external windshield defog and rain removal. The system supplies engine bleed air through an electrically actuated pressure regulating shutoff valve in the tailcone of the airplane and manually positioned valves which regulate air to each windshield. The manual valves are located at each bleed air nozzle and are left in the OFF position for all normal operation. A check should be made to ensure that the rain removal knob is pushed in for windshield anti-icing. When windshield anti-icing is required, the W/S BLEED valves are turned on and the W/S BLEED switch is turned to LO if the indicated OAT is above -18°C or to HI if the indicated OAT is -18°C or below. Normal system operation is indicated by an increase in air noise as the bleed air discharges from the nozzles. A temperature sensor is located near the discharge nozzles and automatically controls the windshield bleed air temperature by modulating crossflow air through a heat exchanger in the tailcone.

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## TEMPORARY FAA APPROVED AIRPLANE FLIGHT MANUAL CHANGE

Publication Affected:	Model 501 Citation I/SP (501-0001 thru -0689) basic FAA Approved Airplane Flight Manual, Revision 28, dated 4 August 2003.
Airplane Serial Numbers Affected:	Airplanes 501-0001 thru -0689.
Description of Change:	Section III, Operating Procedures, Normal Procedures, replace the SURFACE DEICE paragraph.
Filing Instructions:	Insert this temporary change in the Model 501 (501-0001 thru -0689) basic FAA Approved Airplane Flight Manual adjacent to page 3-44.
Removal Instructions:	This temporary change must be removed and discarded when Revision 29 has been collated into the basic FAA Approved Airplane Flight Manual.

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In Section III, Operating Procedures, Normal Procedures, page 3-44, replace the SURFACE DEICE paragraph with the following:

### **SURFACE DEICE**

The pneumatic boots are activated by a surface deice switch, which is spring-loaded to the OFF position and provides one complete cycle following momentary actuation. The vertical stabilizer and the left horizontal stabilizer inflate, then deflate, followed immediately by the right horizontal stabilizer and both wings inflating, then deflating. Proper operation of the surface deice system is indicated by a surface deice light illumination on the annunciator panel, which comes on when the pressure reaches the proper value and should blink off momentarily between the first and last portions of each cycle. A wing deice inspection light is provided on the pilot's side for observing ice build-up on the wing. Surface deice should be actuated when the ice thickness is estimated to be 1/4 to 1/2 inch. Waiting until ice accumulates to greater than 1/2 inch prior to system activation may result in such excessive ice build-up on the empennage surfaces that ice shedding is not adequate. A reset position is provided on the surface deice switch which terminates boot inflation and stops the cycle.

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Wichita, Kansas  
DATE OF APPROVAL 1/14/08

## **ANTI-ICE AND DEICE SYSTEMS** (Continued)

### **WINDSHIELD ANTI-ICE** (Continued)

An additional temperature sensor is located in the bleed air line, which automatically actuates the electrical shutoff valve and illuminates the windshield air overheat annunciator light should the bleed air temperature exceed the normal control value. This condition should not occur unless a sustained high power, low airspeed condition is maintained or a system malfunction occurs. If the windshield air overheat light illuminates, the manual bleed air valves should be modulated to reduce the flow. If the light remains on for over 60 seconds, position the manual valves to OFF. The windshield air overheat light will also illuminate if the electrical shutoff valve in the tailcone opens with the windshield bleed air switch in the OFF position. Self-test of the temperature monitor system is normally accomplished during the preflight warning systems check by turning the windshield bleed air switch to either the HI or LO position and selecting the W/S temperature position on the rotary test switch. Proper system function is verified by illumination of the windshield air overheat annunciator light. Self-tests may also be accomplished in flight, if desired.

If the windshield bleed air anti-ice system fails, a back-up alcohol anti-ice system is provided for the left-hand windshield only. Sufficient alcohol is provided for ten minutes of operation; therefore, plans should be made to leave the icing environment without delay.

### **PITOT/STATIC ANTI-ICE**

Electric heating elements are provided in the pilot's and copilot's pitot tubes, pilot's and copilot's static ports, and angle-of-attack probe (if installed). The pitot-static anti-ice switch actuates all of these elements. Operation may be checked on preflight by turning the switch on for approximately 30 seconds, then off, then feeling each element during the external inspection.

### **SURFACE DEICE**

The pneumatic boots are activated by a surface deice switch, which is spring-loaded to the OFF position and provides one complete cycle following momentary actuation. The vertical stabilizer and the left horizontal stabilizer inflate, then deflate, followed immediately by the right horizontal stabilizer and both wings inflating, then deflating. Proper operation of the surface deice system is indicated by a surface deice light illumination on the annunciator panel, which comes on when the pressure reaches the proper value and should blink off momentarily between the first and last portions of each cycle. A wing deice inspection light is provided on the pilot's side for observing ice build-up on the wing. Surface deice should be actuated when the ice thickness is estimated to be 1/4 to 1/2 inch. Actuating the system too soon will result in ice bridging on the wing. Waiting until ice accumulates to greater than 1/2 inch prior to system activation may result in such excessive ice build-up on the empennage surfaces that ice shedding is not adequate. A reset position is provided on the surface deice switch which terminates boot inflation and stops the cycle.

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Publication Affected: Model 501 Citation I/SP (501-0001 thru -0689) basic FAA Approved Airplane Flight Manual, Revision 28, dated 4 August 2003.

Airplane Serial Numbers Affected: Airplanes 501-0001 thru -0689.

Description of Change: Section III, Operating Procedures, Normal Procedures, Operations in Severe Icing Conditions, add statement for compliance to AD98-04-38.

Filing Instructions: Insert this temporary change in the Model 501 Citation I/SP (501-0001 thru -0689) basic FAA Approved Airplane Flight Manual adjacent to page 3-45.

Removal Instructions: This temporary change must be removed and discarded when Revision 29 has been collated into the basic FAA Approved Airplane Flight Manual.

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In Section III, Operating Procedures, Normal Procedures, immediately following the subheading "OPERATIONS IN SEVERE ICING CONDITIONS" and before the note add the following statement:

In conjunction with the "Operation in Severe Icing Conditions" section in the Operation Limitations and the "Severe Icing Encounter" section in the Abnormal Procedures, this section meets the requirements to be in compliance with AD98-04-38.

**APPROVED BY**   
*for* Margaret Kline, Manager  
Aircraft Certification Office  
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Wichita, Kansas  
**DATE OF APPROVAL** 10/22/07

**OPERATIONS IN SEVERE ICING CONDITIONS****NOTE**

The following weather conditions may be conducive to severe in-flight icing conditions:

- Visible rain at temperatures colder than 0°C ambient air temperature.
- Droplets that splash or splatter at temperatures colder than 0°C ambient air temperature.

**PROCEDURES FOR EXITING THE SEVERE ICING ENVIRONMENT**

These procedures are applicable to all flight phases from takeoff to landing:

1. Monitor the ambient air temperature.
2. While severe icing may form at temperatures as cold as -18°C, increased vigilance is warranted at temperatures around freezing with visible moisture present. Severe icing conditions are indicated by one or more of the following visual cues:
  - Unusually extensive ice accumulations on the airframe and windshield in areas not normally observed to collect ice.
  - Accumulation of ice on the upper surface of the wing aft of the protected area.
3. If the visual cues listed above are observed, accomplish the following:
  - Immediately request priority handling from Air Traffic Control to facilitate exiting the severe icing conditions in order to avoid extended exposure to flight conditions more severe than those for which the airplane has been certified.
  - Avoid abrupt and excessive maneuvering that may exacerbate control difficulties.
  - Do not engage autopilot.
  - If autopilot is engaged, hold control wheel firmly and disengage autopilot.
  - If unusual or uncommanded roll control movement is observed, reduce angle-of-attack.
  - Do not extend flaps when holding in icing conditions. Operation with the flaps extended can result in a reduced wing angle-of-attack, with the possibility of ice forming on the upper surface of the wing further aft on the wing than normal, possibly aft of the protected area.
  - If the flaps are extended, do not retract them until the airframe is clear of ice.
  - Report these weather conditions to Air Traffic Control.

**RAIN REMOVAL**

The windshield bleed air system provides rain removal during flight and ground operations. This system also serves as the windshield anti-ice system when used as described in the windshield anti-ice paragraph of this section.

When rain removal is desired, the windshield bleed air switch should be positioned to LO and the rain removal push-pull knob pulled. A check should be made to ensure the windshield bleed air valves are in the MAX position.